

Claims

What is Claimed is:

1. A process for the production of a CED (cathodic electrodeposition)
5 coating with improved adhesion towards subsequent layers comprising the steps of
 - a) cathodic electrodepositing a coating layer of a CED coating composition onto an electrically conductive substrate and
 - b) thermal curing by baking in an indirectly heated circulating air
10 oven operated with a proportion of fresh air in the circulating air of the oven of 0 to 20 vol.%,
wherein the CED coating composition used contains at least one water-soluble metal nitrate corresponding to a quantity of 1 to 10 mmol of nitrate per 100 g of resin solids content, wherein the metal is selected from the group
15 consisting of metals of atomic numbers 20 to 83, with the exception of chromium, arsenic, rubidium, ruthenium, rhodium, palladium, cadmium, antimony, caesium, osmium, iridium, platinum, mercury, thallium and lead, and wherein at most 50 area-% of the CED-coated substrate surface are rinsed with water prior to thermal curing.
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2. The process of claim 1, wherein the metal nitrate is present in a proportion of 2 to 6 mmol of nitrate per 100 g of resin solids content of the CED coating composition.
- 25 3. The process of claim 1, wherein the at least one metal nitrate is selected from the group consisting of the nitrates of titanium, vanadium, iron, zinc, yttrium, zirconium, tin, cerium, neodymium and bismuth.
4. The process of claim 1, wherein, in addition to the at least one metal
30 nitrate, the CED coating compositions contain at least one further metal compound other than the at least one metal nitrate, wherein the metals are

present in these metal compounds with an oxidation number of +2 or above and not as a constituent of anions.

5. The process of claim 4, wherein the at least one further metal compound comprises a compound selected from the group consisting of compounds of vanadium, iron, zinc, yttrium, zirconium, tin, cerium, neodymium or bismuth.
6. The process of claim 4, wherein the total metal content arising from the contributions from metal nitrate and the at least one further metal compound amounts to 0.1 to 2 wt.% and wherein the sum of the contributions calculated as metal is in each case relative to the resin solids content of the CED coating composition.
7. The process of claim 5, wherein the total metal content arising from the contributions from metal nitrate and the at least one further metal compound amounts to 0.1 to 2 wt.% and wherein the sum of the contributions calculated as metal is in each case relative to the resin solids content of the CED coating composition.
8. The process of claim 1, wherein the substrates comprise automotive bodies or automotive body parts.
9. The process of claim 1, wherein the CED-coated substrate surface is rinsed at least in the area visible to the observer with ultrafiltrate obtained from the CED coating bath.
10. The process of claim 1, wherein, after rinsing with ultrafiltrate, rinsing is performed with water.

11. The process of claim 1, wherein at least one further coating layer is applied onto the baked CED coating layer.
12. Substrates coated by the process of claim 1.